

## CLAIMS

### What is claimed is:

1. A method for inducing apoptosis in cells, said method comprising the step of exposing one or more cells to a cytotoxic agent for a sufficient time and at a sufficient temperature to induce apoptosis of said one or more cells, said cytotoxic agent consisting of a targeting moiety and an avidin moiety wherein said targeting moiety is capable of binding to one or more of said cells.
2. A method for inducing apoptosis in cells according to claim 1 wherein said cells are liquid or solid tumor cells
3. A method for inducing apoptosis in cells according to claim 2 wherein said liquid or solid tumor cells are cancerous.
4. A method for inducing apoptosis according to claim 1 wherein said targeting moiety binds to a cell surface protein or carbohydrate.
5. A method for inducing apoptosis in cells according to claim 1 wherein said targeting moiety is capable of binding to one or more growth factor receptors located on said cells.
6. A method for inducing apoptosis in cells according to claim 1 wherein said cells are *in vivo*.
7. A method for inducing apoptosis in cell according to claim 1 wherein said cells are *in vitro*.
8. A method for inducing apoptosis in cells according to claim 1 wherein said targeting moiety comprises an antibody, antibody fragment, scFv or a ligand.
9. A method for inducing apoptosis in cells according to claim 1 wherein said avidin moiety comprises molecules selected from the group consisting of avidin and avidin analogues.
10. A method for inducing apoptosis in cells according to claim 8 wherein said avidin moiety comprises two molecules selected from the group consisting of avidin and avidin analogues.
11. A method for inducing apoptosis according to claim 1 wherein said cytotoxic agent is a fusion protein.

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12. A method for inhibiting the proliferation of a proliferating cell population, said method comprising the step of exposing said cell population to a cytotoxic agent for a sufficient time and at a sufficient temperature to inhibit proliferation of said proliferating cell population, said cytotoxic agent consisting of a targeting moiety and an avidin moiety wherein said targeting moiety is capable of binding to one or more of said cells.
13. A method for inhibiting the proliferation of a cell population according to claim 12 wherein said cell population comprises liquid or solid tumor cells.
14. A method for inhibiting the proliferation of a cell population according to claim 13 wherein said liquid or solid tumor cells are cancerous.
15. A method for inhibiting proliferation of a cell population according to claim 12 wherein said targeting moiety binds to a cell surface protein or carbohydrate.
16. A method for inhibiting the proliferation of a cell population according to claim 12 wherein said targeting moiety is capable of binding to one or more growth factor receptors located on said cells.
17. A method for inhibiting the proliferation of a cell population according to claim 12 wherein said cell population is *in vivo*.
18. A method for inhibiting the proliferation of a cell population according to claim 12 wherein said cell population is *in vitro*.
19. A method for inhibiting the proliferation of a cell population according to claim 12 wherein said targeting moiety comprises an antibody, antibody fragment, scFv or a ligand.
20. A method for inhibiting the proliferation of a cell population according to claim 12 wherein said avidin moiety comprises molecules selected from the group consisting of avidin and avidin analogues.
21. A method for inhibiting the proliferation of a cell population according to claim 12 wherein said avidin moiety comprises two molecules selected from the group consisting of avidin and avidin analogues.

22. A method for inhibiting the proliferation of a cell population according to claim 12 wherein said cytotoxic agent is a fusion protein.

23. A composition for use in treating cells to induce apoptosis and/or inhibit cell proliferation wherein said cells include cell surface proteins or carbohydrates, said composition comprising:  
    a cytotoxic agent consisting of a targeting moiety and an avidin moiety wherein said targeting moiety is capable of binding to one or more of said cell surface proteins or carbohydrates; and  
    a pharmaceutically acceptable carrier.

24. A composition for use in treating cells to induce apoptosis and/or inhibit cell proliferation according to claim 23 wherein said targeting moiety comprises an antibody, antibody fragment, scFv or ligand.

25. A composition for use in treating cells to induce apoptosis and/or inhibit cell proliferation according to claim 23 wherein said avidin moiety comprises molecules selected from the group consisting of avidin and avidin analogues.

26. A composition for use in treating cells to induce apoptosis and/or inhibit cell proliferation according to claim 23 wherein said cell surface protein or carbohydrate is a growth factor receptor.

27. A composition for use in treating cells to induce apoptosis and/or inhibit cell proliferation according to claim 24 wherein said antibody is an anti-transferrin receptor antibody.

28. A composition for use in treating cells to induce apoptosis and/or inhibits cell proliferation according to claim 23 wherein said targeting moiety is a fusion protein.